

# A MATURE CUPULE OF *LEPTOSTROBUS* (CZEKANOWSKIALES) FROM THE LATE TRIASSIC OF QUEENSLAND

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A single bivalvate cupule of *Leptostrobus* is reported from Upper Triassic sediments of the Ipswich Coal Measures. This record is the oldest known for the genus. □ *Leptostrobus*, Triassic, Australia.

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The Czekanowskiales were first recognised as occurring in Australia when Jones & de Jersey (1947) recorded *Czekanowskia tenuifolia* (Johnston) from Late Triassic Ipswich Coal Measures. The species had originally been described by Johnston (1887) from Lord's Hill near Hobart. At that date they were regarded as belonging to *Baiera* a genus of Ginkgoales. On the basis of its epidermal structure the species *B. tenuifolia* was transferred to *Czekanowskia* by Jones & de Jersey (1947).

The similarity of *B. tenuifolia*, as it was then known, to *Czekanowskia microphylla* had been noted by Walkom (1925), indicating an overlap in gross morphology of the two species.

In addition to *Czekanowskia* Jones & de Jersey (1947) also recorded a single presumed cupule-bearing axis of *Leptostrobus* in the same deposit. The cup-shaped organs are much smaller than the cupule described here and so may be regarded as immature.

Although *Czekanowskia* and *Leptostrobus* have not been encountered in organic connection, their frequent joint occurrence is taken to indicate that they represent the foliage and cupules of the same taxon.

## STRATIGRAPHY

The specimen described was exposed by the splitting of fossiliferous, siltstone float close to a dirt track beginning at the end of Thomas St, on the W side of 'Castle Hill', Blackstone. On the basis of lithology the specimen is considered as being in situ.

Whether these siltstones represent a horizon within the Rhaetian Aberdare Conglomerate or the Carnian Blackstone Formation is difficult to determine with certainty, because the two are separated by an unconformity, and siltstones within the Aberdare Conglomerate are lithologi-

cally similar to some beds in the Blackstone Formation (Cranfield et al., 1976). Nonetheless, it is certain the siltstone float is Upper Triassic (de Jersey, 1975).

## SYSTEMATIC PALAEOBOTANY

Division Gymnospermae  
Order Czekanowskiales Harris & Miller  
***Leptostrobus* Heer**  
***Leptostrobus cookii* sp. nov.**  
(Figs 1-2)

ETYMOLOGY. For Alex Cook in recognition of his enthusiasm for all things geological.

MATERIAL. Holotype: QMF37262a, (convex) Ipswich, Queensland 27°37'39"S, 152°47'58"E; QMF37262b, (concave) counterpart.

DIAGNOSIS. Coalified cupule consisting of two similar oppositely placed valves obovate in outline. Internal surface with slightly raised longitudinal ribs. Seeds and ovules missing.

DESCRIPTION. The cupule is completely coalified and no cell detail is available. The scales are obovate in outline, 16mm long and 12mm broad. The thickening of the valve can be estimated from the fractured surfaces. Towards its apex the valve is about half as thick as at its base (2.5-3.0mm).

The inner surface of one scale is concave and that of the other is convex which suggests that the latter has been pushed into the former during the process of fossilization (Figs 1, 2).

## DISCUSSION

Well-developed cupules of *Leptostrobus* have not been reported previously from Australia although its associated foliage *Czekanowskia* (as *Baiera*) has been known for more than a century. Since the Ipswich area, in particular, has been intensively collected over a long period it is clear the cupules are rare.

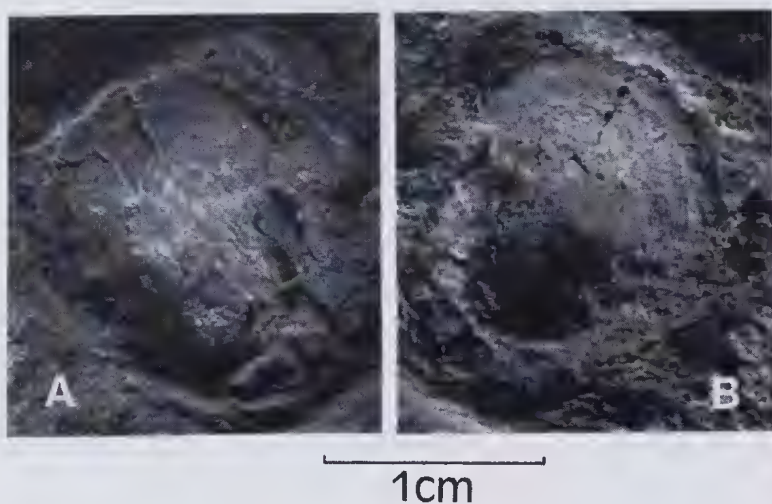


FIG. 1. Internal surfaces of the valves of a mature cupule of the holotype of *Czekanowskia cookii* sp. nov. A, QMF37262a; B, QMF37262b (surface convex due to compression).

As judged by the rotting vegetation on the floor of a small lake at J.C. Slaughter Falls in the Mt Coot-tha Reserve near Brisbane this situation is perhaps to be expected. Although leaves of *Eucalyptus* and *Corymbia* are abundant on the lake-

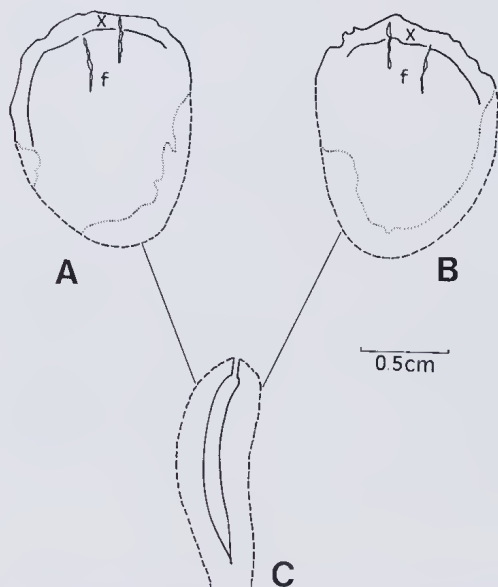


FIG. 2. Diagrammatic representation of a mature cupule of the holotype of *C. cookii* sp. nov. based on the valves illustrated in Fig. 1. A, valve QMF37262a. B, valve QMF37262b. C, hypothetical reconstruction of cupule. x = valve margin, f = cracks in wall of valve.

bed the woody fruits of the two genera are rare (Clifford, 1990).

Seed-bearing structures of any kind are likewise rare in the Ipswich beds which were also laid down in freshwater. Aside from *Leptostrobus*, the only other seed-bearing structures recorded in the sediments are *Fraxinopsis major* and a possible crustosperm megasporophyll (Hill et al., 1966; Jones & de Jersey, 1947).

In his original description of *Czekanowskia tenuifolia* Johnston (1887) referred to abundant associated reproductive structures in the material. He provided detailed descriptions and some figures but

these are difficult to interpret and so will not be considered further.

The presence of *Czekanowskia* in the Triassic of Australia has been long over-looked. In the paper in which the Order was established (Harris & Miller, 1974) no reference was made to the work of Jones & de Jersey (1947) which was also apparently unknown to either Taylor & Taylor (1993) or Sporne (1974) who claim the *Czekanowskia* extended only from the Jurassic to the Cretaceous.

According to Max Banks (pers. comm.) the foliage reported from the New Town shales at Lord's Hill are Ladinian and so are slightly older than the Ipswich deposits which were laid down about 235MA (Harland et al., 1989). The geological range of the *Czekanowskia* therefore is to be extended back from the early Jurassic to the Middle Triassic.

#### ACKNOWLEDGEMENTS

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